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ABSTRACT

Two studies were conducted to examine (1) 1- to 3-day-old infants' imitation of their mothers, and (2) mothers' imitation of their newborn infants. For the infant imitation study, 30 mothers and their infants served as subjects. Two observers stood behind the mother to view the infant's face while the mother presented one of the following gestures: tongue protrusion, mouth opening, lip protrusion, and shifting the eyes to the infant's left. Results indicated that more infant responses occurred during the phase following the maternal gestures than during a 5-second baseline phase preceding stimulus presentation. For the mother imitation study, 24 healthy mother-newborn pairs comprised the sample. On each of the first three days following delivery mother-infant pairs were videotaped in a non-feeding interaction for approximately 5 minutes. Mother-infant interactions were coded for three types of maternal imitation: vocal, gestural and visual. Also, separate codings were made of infant visual regard toward the mother's face. Results of the first study indicate that the infants did not imitate their mothers. Findings of the second study indicate that this sample of mothers imitated their newborn infants. Additionally, correlations between maternal imitation and infant visual regard changed from significantly negative to significantly positive across the first three days of the infant's life. It is concluded that these early imitative episodes serve important functions within mother-infant interaction and provide foundations for later turn-taking. (Author/RH)

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Imitation Within the Context of Mother-Newborn Interaction

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Imitation Within the Context of Mother-Newborn Interaction

Historically, the imitation process has stimulated a great deal of research interest, particularly as observed in preschool- and school-aged children. However, only within the past ten years have researchers begun to address the origins of this process, that is, as it may be observed during infancy. In that period of time, reports have been provided of infants' imitating at increasingly earlier ages. For example, much evidence has accrued concerning the imitative capacities of 3-4-month-old infants (e.g., Kessen,Levine & Wendrich, 1979; Pawlby, 1977). Further, in the most intriguing report of imitation during early infancy, Meltzoff and Moore (1977) published results indicating that two-week-old infants imitated gestures.

Since these reports, interest in infant imitation has lessened considerably, implying that the issue of imitation's origins has somehow been resolved. However, the validity of Meltzoff and Moore's (1977) findings has been seriously questioned by numerous researchers (e.g., Anisfeld, 1979; Hamm, Russell & Koepke, 1979; Hayes & Watson, 1979; Jacobson & Kagan, 1979; Masters, 1979). Particular problems with Meltzoff and Moore's research, as noted by two of the present authors in an earlier paper (Francis, Self & Guillory, 1979), included their use of non-naive observers, failure to report reliability estimates, and use of univariate statistics. While these first two problems are fairly self-explanatory, the third requires elaboration: Specifically, by using univariate statistical techniques, it cannot be determined whether infants are emitting specific single behaviors in response to a modelled gesture of rather a cluster of behaviors. Further, even if Meltzoff and Moore's research were free of these problems, their study does not document imitation in newborn infants, that is during the first few days of life. The purpose of one study described in the present report, then, was to systematically examine imitation in 1-3 day-old infants, using appropriate methodological and statistical procedures.

In addition, a separate study addressed mothers' imitation of their infants, a phenomenon which has thus far been largely ignored. Although Moss (1967) reported some maternal imitation of 3-week-old infants, this imitation has not yet been examined during earliest mother-infant interactions. Specific questions of interest in the present study included the frequency with which mothers imitated their infants across the first three days of life, as well as the modalities (e.g., vocal, gestural) in which this imitation occurred. In addition, given maternal imitation of their newborns, it was of interest whether such imitation would be related to any infant behaviors. As Field (1977), in an experimental manipulation of maternal imitation, reported that this imitation resulted in increased infant gazing at mother, the current study measured infants' visual responsiveness to their mothers. In describing the two studies, the methodology and results of the infant and maternal imitation investigations will be presented separately, followed by a discussion integrating the findings of the two studies.

For the infant imitation study, 30 mothers and their infants (15 males, 15 females) with a mean age of 55 hours served as subjects; all mother-infant pairs had experienced an uncomplicated vaginal delivery and a normal postpartum course as determined by the medical staff.

The experimental procedure was conducted in the mothers' hospital room. For the procedure, two observers (one naive to the study's purpose) stood behind the mother, who was sitting up with her infant on her knees in an en face position; therefore, they could see the infant but not the mother's face. The experimenter stood beside the mother and indicated, while the observers' backs were turned, which of the following gestures to present: Tongue protrusion, mouth opening, lip protrusion, and shifting the eyes to the infant's left. Each stimulus was presented three times consecutively, for a total of twelve

trials. For each trial, a 5-second baseline phase (during which the mother attended to her infant) was followed by a stimulus presentation; then, observers watched the infant for five seconds. During each of the 5-second phases, the observers wrote down any infant behaviors they observed; mean reliability for the gestures of interest was .87. The experimenter had the mother repeat a trial if she has presented a gesture incorrectly or if the infant was not attending to her at the beginning of each 5-second phase.

For data analyses, as preliminary analyses revealed no sex differences, data were collapsed across this factor. Data were analyzed using a 2 (Phase) X 4 (Gesture) MANOVA with the infants' tongue protrusions, mouth openings, lip protrusions and gaze shifts as dependent measures. This analysis revealed a significant phase effect, $F(4,232) = 4.62$, $p < .001$; examination of means indicated that more infant responses occurred during the phase following the maternal gestures than during the baseline phase. However, this finding does not support a hypothesis of infant imitation; rather, it suggests only that the infant behaviors of interest increased following a maternal gesture, regardless of which gesture was presented. Supporting the conclusion that these infants did not imitate their mothers was the failure of the phase x gesture interaction to achieve significance.

Before these results are discussed, the method and results of the study on maternal imitation will first be presented. For this second study, 24 healthy mother-newborn pairs (different from those utilized in the first study) comprised the sample; 12 of the infants were male, and 12 were female.

As a more naturalistic demonstration was desired of maternal imitation compared to the infant imitation study, on each of the first three days following delivery mother-infant pairs were videotaped in a non-feeding interaction for approximately five minutes in the mother's hospital room. No specific

instructions were given to the mothers regarding their behaviors during taping; in addition, infants remained in a predominantly alert state throughout taping.

All videotapes of mother-infant interaction were coded by two independent observers as to the occurrence of three types of maternal imitation: vocal, gestural and "visual" (e.g., following the infant's gaze). Also, separate codings were performed for measuring infant visual regard towards the mother's face. Interobserver reliability for the maternal imitation measures exceeded .90 for all observations; in addition reliability measures for infant visual regard averaged .79.

In considering the maternal imitation data, it was clear that this sample of mothers imitated their newborn infants. For example, on the average, mothers exhibited 7.79 total imitative acts across the three days, with all but one mother (94%) imitating their infants during this time. In addition, although amounts of maternal imitation did not significantly increase across days, the daily percentage of mothers who imitated their infants increased consistently across observations. With regard to types of imitation mothers exhibited, overall 40% of the observed imitation was gestural, 40% was visual, and 20% was vocal.

In order to assess the relationships between maternal imitation and infant visual regard, Spearman correlational analyses were performed, using the amounts of maternal gestural, vocal and visual imitation and infant visual regard observed on each of the three days as variables; these analyses revealed several interesting findings. For example, on the first day a significant negative correlation was observed between infant visual regard and maternal visual imitation; thus, on this day, this type of maternal imitation was associated with decreased infant looking at mother. On the second day, no significant correlations between maternal imitation and infant visual regard were observed. However, on

the third day analyses revealed infant visual regard to be positively and significantly related to maternal gestural imitation. Therefore, at this time increased infant looking at mothers was associated with increased maternal gestural imitation.

The results of these studies are relevant to two developmental processes, imitation and mother-infant interaction. In considering the latter, the fact that almost all mothers imitated, together with the demonstrated relationships between this imitation and infant visual behaviors, suggests that these early imitative episodes serve important functions within mother-infant interaction. For instance, with respect to their functions for the infant, these imitative episodes provide an opportunity to regulate the mother-infant relationship. McCall (1975), in discussing this issue with respect to older infants, has stated that being imitated facilitates infants' awareness of their ability to control their environment. The present study demonstrates that the chance to exert such control is present from a mother and infant's earliest encounters. In addition, these early imitative behaviors appear functional for the mother as well, in that they allow her to maintain interaction with her infant. For example, frequently in the present study, mothers, subsequent to gesturally and visually imitating their infants, would vocalize to their infants (e.g., "Are you sticking out your tongue at mommy?"), thereby allowing them to not only maintain interaction, but to elaborate upon it. In a related study by Noble, Self and Francis (1981), the relationships between these imitative acts and maternal vocalizations to their infants have been documented.

Finally, as well as serving differential functions for mothers and infants, the imitative episodes observed in the present study are suggested to play important roles in the interaction process itself. One role appears to be the facilitation of this process; certainly it can be argued that the maintenance

and elaboration of the interaction as described above facilitates the mother-infant relationship. In considering a second role, the very nature of imitation (e.g., one partner must follow the other's behavior within a relatively limited period of time) ensures its importance in the temporal patterning of the interaction process. Several authors, notably Schaffer (1977), have commented upon this importance, noting that imitation makes significant contributions to turn-taking between mothers and infants. From the present study, it may be concluded that the foundations for later turn-taking are being established through these early, relatively simplistic imitation episodes in which the mother repeats the infant's behavior.

It seems appropriate, during this discussion of turn-taking, to consider a second process to which the present report relates, that is infant imitative development. As revealed by the infant imitation study, maternal gestures elicited clusters of infant responses, with no differential imitation of these gestures occurring. Several points should be made regarding this finding, the first of which can be considered a methodological comment. While it may be argued that the differences in results of the present study and those reported by Meltzoff and Moore (1977) are a function of the two-week age difference in the infant samples, it is much more likely that the stringent experimental and statistical procedures employed in the current research accounts for these differences. It is our opinion that, when examining imitation within an experimental context, such rigorous procedures are mandated, if the origins and subsequent development of the imitation process are to be adequately clarified.

However, it is not our intent to underestimate the importance of the behavioral clusters elicited by maternal gestures in the infant imitation study. Indeed, it may be that with time these clusters become differentiated into specific imitative responses. Further, the data from the maternal imitation study may be

important in this regard. As these data demonstrated, infants are exposed to imitative behaviors from their earliest social interactions. While it is not yet clear how "being imitated" influences the infant, it is reasonable to assume that it enhances the probability that infant imitation takes place. Specifically, in addition to providing a temporal structure crucial for the occurrence of infant imitation, maternal imitative episodes offer a more discrete and salient behavior to which the infant can attend and respond. Therefore, just as it was earlier argued that imitation facilitates the relationship between mothers and infants, the converse may also be suggested, that is, the context of mother-infant interaction facilitates the occurrence of infant imitation.

In summary, the present report has demonstrated that mother-infant interaction is an excellent context for the occurrence of maternal imitation, as well as for examining the emergence of infant imitation. In addition, the present research indicates that imitation plays an important role in the mother-infant relationship. Together, these findings emphasize the necessity for further examining maternal and infant imitation within the interactional context; in this way, more complete understanding may be obtained of what appear to be two mutually-facilitating processes.

References

Anisfeld, M. Interpreting "imitative" responses in early infancy. Science, 1979, 205, 214-215.

Field, T. M. Effects of early separation, interactive deficits, and experimental manipulations on infant-mother face-to-face interaction. Child development, 1977, 48, 763-771.

Francis, P. L., Self, P. A. & Guillory, A. Neonatal imitation: Theoretical and methodological issues. Paper presented at the Oklahoma Academy of Science, Edmond, Oklahoma, November 1979.

Hamm, M., Russell, M. & Koepke, J. Neonatal imitation? Paper presented at the Society for Research in Child Development, San Francisco, March 1979.

Hayes, L. A. & Watson, J. S. Neonatal imitation: Fact or artifact? Paper presented at the Society for Research in Child Development, San Francisco, March 1979.

Jacobson, S. W. & Kagan, J. Interpreting "imitative" responses in early infancy. Science, 1979, 205, 215-217.

Kessen, W., Levine, J. & Wendrich, K. A. The imitation of pitch in infants. Infant behavior and development, 1979, 2, 93-99.

McCall, R. B. Imitation in infancy. Paper presented at the biennial meeting of the Society for Research in Child Development, Denver, Colorado, April 1975.

Masters, J. C. Interpreting "imitative" responses in early infancy. Science, 1979, 205, 215.

Meltzoff, A. N. & Moore, M. K. Imitation of facial and manual gestures by human neonates. Science, 1977, 198, 75-78.

Moss, H. A. Sex, age, and state as determinants of mother-infant interaction. Merrill-Palmer Quarterly, 1967, 13, 19-36.

Noble, C. A., Self, P. A. & Francis, P. L. Maternal speech and imitation in communication development. Paper presented at the meeting of the Southwestern Psychological Association, Houston, Texas, April 1981.

Pawlby, S. J. Imitative interaction. In H. R. Schaffer (Ed.) Studies in mother-infant interaction. London: Academic Press, 1977.

Schaffer, H. R. Early interactive development. In H. R. Schaffer (Ed.), Studies in mother-infant interaction. London: Academic Press, 1977.